UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,588	02/19/2004	Noritake Nagashima	392.1874	2481

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EXAMINER
NORTON, JENNIFER L

ART UNIT	PAPER NUMBER
2121	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/780,588	NAGASHIMA ET AL.
	Examiner	Art Unit	
	Jennifer L. Norton	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2004*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 Februrary 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/17/05 and 12/22/05</u>

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-13 are pending.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 3-4, 10, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by

U.S. Patent No.: 4,405,980 (hereinafter Hess).

4.   As per claim 3, Hess discloses a controller with a sequence control section

incorporated therein, the sequence control section comprising:

an address table (Fig. 6, element PSp) storing physical addresses for signals

symbolized with symbol information for executing instructions of a sequence program

(col. 5, lines 54-58); and

determining means (Fig. 6, element AR and PZ) for determining a physical address to

be accessed for the symbolized signal based on symbol information included in an

object code associated with the instruction of the sequence program, and said address

table in execution of the instruction (col. 2, lines 25-33, col. 6, lines 39-43 and col. 8,

lines 17-29).

5.   As per claim 4, Hess discloses a controller with a sequence control section

discloses incorporated therein, the sequence control section comprising:

switching means (Fig. 1, element PZ) for successively switching a sequence

program to be executed among a plurality of sequence programs (col. 6, lines 28-35),

signals for executing instructions of the sequence program being symbolized with

symbol information (col. 5, lines 54-58);

a plurality of address tables (Fig. 6, element PSp) respectively prepared for the

sequence programs, each of said address tables storing physical addresses for the

symbolized signals (col. 5, lines 54-58); selecting means for selecting one of said

address tables for the sequence program to be executed (col. 6, lines 39-43, col. 8,

lines 17-29 and Fig. 6, element AR); and

determining means (Fig. 6, element AR and PZ) for determining a physical

address to be accessed for the symbolized signal based on the symbol information

included in an object code associated with the instruction of the sequence program and

the address table selected by the selecting means in executing the instruction (col. 2,

lines 25-33, col. 6, lines 39-43 and col. 8, lines 17-29).

6.   As per claim 10, Hess discloses switching means (Fig. 6, element PZ) switches

the sequence program to be executed each time when a set time period elapses (col. 2,

lines 25-48).

7.   As per claim 12, Hess discloses selecting means (Fig. 6, element AR) selects one

of the address tables in accordance with a table-selection instruction included in the

sequence program (col. 6, lines 39-43 and col. 8, lines 17-29).

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented
> and the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-2, 5-9, 11 and 13 rejected under 35 U.S.C. 103(a) as being

unpatentable over Hess in view of U.S. Patent No.: 6,725,288 (hereinafter Nagao).

10.   As per claim 1, Hess teaches to a controller (Fig. 1) with a sequence control

section incorporated therein, the sequence control section comprising:

        switching means (Fig. 1, element PZ) for successively switching a sequence

program to be executed among a plurality of sequence programs (col. 6, lines 28-35),

signals for executing instructions of the sequence program being grouped (col. 2, lines

25-27, col. 5, lines 54-58, col. 6, lines 60-68 and Fig. 1, element PSp and ASp);

        a plurality of address tables respectively prepared for the sequence programs

(col. 7, lines 9-12);

selecting means (Fig. 6, element AR) for selecting one of said address tables for the sequence program to be executed (col. 6, lines 39-43 and col. 8, lines 17-29); and

determining means (Fig. 6, element AR and PZ) for determining a physical address to be accessed for the grouped signal (col. 2, lines 25-29, col. 6, lines 39-43 and col. 8, lines 17-21).

Hess does not expressly teach each of said address tables storing top physical addresses for the grouped signals, a physical address to be accessed for the grouped signal based on information on group designation and an offset address from the top physical address, which is included in an object code associated with the instruction of the sequence program, and the address table selected by said selecting means in execution of the instruction.

Nagao teaches each of said address tables storing top physical addresses for the grouped signals (Fig. 7, element Map Data #n), a physical address to be accessed for the grouped signal based on information on group designation (col. 7, lines 29-31 and 56-58) and an offset address from the top physical address, which is included in an object code associated with the instruction of the sequence program (col. 8, lines 31-35 and Fig. 7, element Map Data #n), and the address table selected by said selecting means in execution of the instruction (col. 9, lines 45-54 and col. 14, lines 18-24).

Therefore it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify the teaching of Hess to include each of said address tables storing top physical addresses for the grouped signals, a physical address to be accessed for the grouped signal based on information on group designation and an offset address from the top physical address, which is included in an object code associated with the instruction of the sequence program, and the address table selected by said selecting means in execution of the instruction for the advantage of responding to a change in the address of a device without changing the control program (col. 2, lines 56-58).

11.   As per claim 2, Hess teaches the sequence control section comprising:

switching means (Fig. 1, element PZ) for successively switching a sequence program to be executed among a plurality of sequence programs (col. 6, lines 28-35), signals for executing instructions of the sequence program being grouped according to signal type or signal address range (col. 2, lines 25-27, col. 5, lines 54-58, col. 6, lines 60-68, col. 7, lines 4-12, and Fig. 1, element PSp, Asp and AKU);

a plurality of address tables respectively prepared for the sequence programs (col. 7, lines 9-12);

determining means (Fig. 6, element AR and PZ) for determining a physical address for the grouped signal (col. 2, lines 25-29, col. 6, lines 39-43 and col. 8, lines

17-29); which is included in an object code associated with the instruction of the

sequence program, and one of the plurality of address tables (col. 8, lines 24-35);

calculation means (Fig. 6, element AR) for calculating a physical address for the

grouped signal based on the determined physical address (col. 6, lines 39-43 and col. 8,

lines 17-21); and

execution means (Fig. 6, element ALU) for executing the instruction by accessing

the determined physical address for the grouped signal (col. 8, lines 61-65 and col. 12,

lines 7-10).

Hess does not expressly teach each of said address tables top physical addresses

for the grouped signals, determining means for determining a top physical address for

the grouped signal based on information on group designation and calculation means

for calculating a physical address for the grouped signal based on the determined top

physical address and information on an offset address from the top physical address

included in the object code.

Nagao teaches each of said address tables top physical addresses for the

grouped signals (Fig. 7, element Map Data #n), determining means for determining a

top physical address for the grouped signal based on information on group designation

(col. 7, lines 29-31 and 56-58) and calculation means for calculating a physical address

for the grouped signal based on the determined top physical address (col. 9, lines 45-54

and col. 14, lines 18-24) and information on an offset address from the top physical address included in the object code (col. 8, lines 31-35 and Fig. 7, element Map Data #n).

Therefore it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify the teaching of Hess to each of said address tables top physical addresses for the grouped signals, determining means for determining a top physical address for the grouped signal based on information on group designation and calculation means for calculating a physical address for the grouped signal based on the determined top physical address and information on an offset address from the top physical address included in the object code for the advantage of responding to a change in the address of a device without changing the control program (col. 2, lines 56-58).

12.   As per claim 5, Hess teaches a controller with a sequence control section incorporated therein, the sequence control section comprising:

switching means (Fig. 1, element PZ) for successively switching a sequence program to be executed among a plurality of sequence programs (col. 6, lines 28-35), signals for executing instructions of the sequence program being grouped according to signal type or signal address range, or being symbolized with symbol information (col. 2, lines 25-29, col. 6, lines 39-43 and col. 8, lines 17-21);

address tables respectively prepared for the sequence programs (Fig. 1, element

ASp and PSp), the address tables including first address tables (Fig. 1, element ASp)

storing physical addresses for the grouped signals and second address tables storing

physical addresses for symbolized signals (Fig. 1, element PSp and col. 5, lines 44-46);

first determining means (Fig. 6, element AR) for determining a physical address

for the grouped signal based on information on group designation included in an object

code associated with the instruction of the sequence program (col. 2, lines 25-29, col.

6, lines 39-43 and col. 8, lines 17-21), and one of the first address tables (Fig. 1,

element ASp);

calculation means (Fig. 6, element AR) for calculating a physical address to be

accessed for the grouped signal based on the determined physical address (col. 6, lines

39-43 and col. 8, lines 17-24).

second determining (Fig. 6, element AR and PZ) means for determining a

physical address to be accessed for the symbolized signal based on symbol information

included in an object code assigned for instruction of the sequence program (col. 2,

lines 25-33, col. 6, lines 39-43 and col. 8, lines 17-29), and one of the second address

tables (Fig. 1, element PSp); and

execution means (Fig. 6, element ALU) for executing the instruction by accessing

the determined physical address (col. 8, lines 61-65 and col. 12, lines 7-10).

Hess does not expressly teach a top physical address and information on an

offset address from the top physical address included in the object code.

Nagao teaches top physical addresses (col. 7, lines 29-31 and 56-58 and Fig. 7,

element Map Data #n) and information on an offset address from the top physical

address included in the object code (col. 8, lines 31-35 and Fig. 7, element Map Data

#n).

Therefore it would have been obvious to one of ordinary skill in the art at the

time of applicant's invention to modify the teaching of Hess to include top physical

addresses and information on an offset address from the top physical address included

in the object code for the advantage of responding to a change in the address of a

device without changing the control program (col. 2, lines 56-58).

13.   As per claim 6, Hess discloses switching means (Fig. 6, element PZ) switches the

sequence program to be executed each time when a set time period elapses (col. 2,

lines 25-48).

14.   As per claim 7, Hess discloses selecting means (Fig. 6, element AR) selects one

of the address tables in accordance with a table-selection instruction included in the

sequence program (col. 6, lines 39-43 and col. 8, lines 17-29).

15.   As per claim 8, Hess discloses selecting means (Fig. 6, element AR) for selecting

one of the address tables in accordance with a table-selection instruction included in

the sequence program (col. 6, lines 39-43 and col. 8, lines 17-29).

16.   As per claim 9, Hess discloses switching means (Fig. 6, element PZ) switches the

sequence program to be executed each time when a set time period elapses (col. 2,

lines 25-48).

17.   As per claim 11, Hess discloses switching means (Fig. 6, element PZ) switches

the sequence program to be executed each time when a set time period elapses (col. 2,

lines 25-48).

18.   As per claim 13, Hess discloses selecting means (Fig. 6, element AR) for

selecting one of the address tables in accordance with a table-selection instruction

included in the sequence program (col. 6, lines 39-43 and col. 8, lines 17-29).

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

The following references are cited to further show the state of the art with respect to signal transfer control systems.

U.S. Patent No.: 5,224,031 discloses a signal transfer system of a programmable controller used to control a machine tool.

U.S. Patent No.: 5,406,473 discloses a programmable controller for controlling equipment in accordance with a sequence program.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer L. Norton whose telephone number is 571-272-3694. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

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